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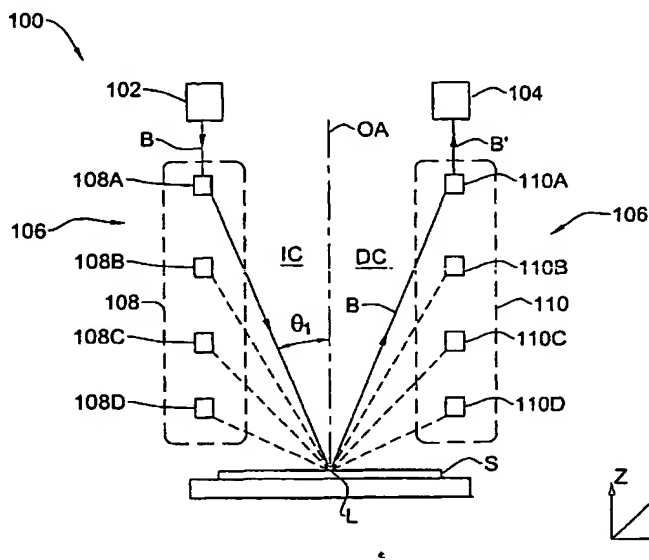
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(54) Title: AN OPTICAL SYSTEM OPERATING WITH VARIABLE ANGLE OF INCIDENCE



(57) Abstract: An optical system for use in measurements in a sample comprising a light source (102) operable to produce an incident light beam propagating in a certain direction towards the sample (S) through an illumination channel (IC), a detector unit (104) for collecting light coming from the sample through a detection channel (DC), and generating data indicative of the collected light, a light directing assembly (106) operable to direct the incident beam onto a certain location on the sample's plane with a plurality of incident angles, and to direct light returned from the illuminated location to the detector unit (104), the light directing assembly (106) comprising a plurality of beam deflector elements (108 A-D), at least one of the deflector elements being movable and position of said at least one movable deflector element defining one of the selected incident angles.

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A. CLASSIFICATION OF SUBJECT MATTER  
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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 392 125 A (REISSER HELMUT) 21 February 1995 (1995-02-21) column 3, line 15 - line 44 column 3, line 61 - column 4, line 16 figure 1	1-3, 20, 21
A	WO 00 58713 A (BENESCH NORBERT ; PFITZNER LOTHAR (DE); SCHNEIDER CLAUS (DE); FRAUN) 5 October 2000 (2000-10-05) page 8, line 16 - page 9, line 18 figure 1	1, 4, 20, 21
A	US 5 436 464 A (MORIYA HAJIME ET AL) 25 July 1995 (1995-07-25) column 10, line 7 - line 40 figure 1	1, 4, 5, 20, 21
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Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 4 218 144 A (JUNGLES JOHN ET AL)  19 August 1980 (1980-08-19)  column 3, line 6 - line 21  column 3, line 34 - line 39  figure 1</p> <p>-----</p>	1,20,21

# INTERNATIONAL SEARCH REPORT

Information on patent family members

national Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5392125	A	21-02-1995	DE 4138679 C1 GB 2261728 A ,B	18-02-1993 26-05-1993
WO 0058713	A	05-10-2000	DE 19914696 A1 WO 0058713 A2 EP 1166090 A2 JP 2002540422 T US 2002101585 A1	02-11-2000 05-10-2000 02-01-2002 26-11-2002 01-08-2002
US 5436464	A	25-07-1995	JP 3168480 B2 JP 5288688 A JP 3159271 B2 JP 5340882 A JP 6003281 A	21-05-2001 02-11-1993 23-04-2001 24-12-1993 11-01-1994
US 4218144	A	19-08-1980	DE 2860548 D1 EP 0001178 A1 GB 2004061 A ,B JP 54051575 A	16-04-1981 21-03-1979 21-03-1979 23-04-1979